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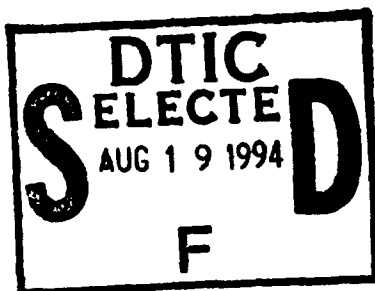
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# JOINT DOCTRINE FOR THEATER COUNTERAIR OPERATIONS



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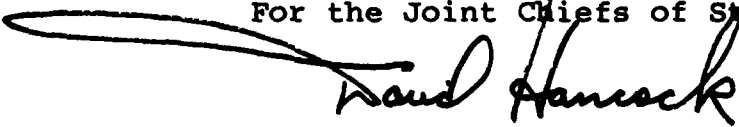
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JOINT DOCTRINE FOR THEATER COUNTERAIR OPERATIONS  
(For Overseas Land Areas)

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## CHAPTER I. INTRODUCTION

1. Aim. The aim of this publication is to issue joint doctrine for the planning and employment of joint forces in theater counterair operations.

2. Scope

a. The joint doctrine established in this publication applies to unified commands and their subordinate commands and those joint task forces that may be established by the President, Secretary of Defense, or commander of a unified command for the conduct of specific operations. The doctrine is broadly stated to fit the widely varying situations and areas in which counterair operations may be undertaken. The influence of geography, international agreements, alliance command structure, enemy capabilities, and concepts of operations are such that military strategies may vary considerably between areas. Force employment plans that support the military strategy must be developed in more detail for each theater by the commander exercising operational command. Plans must consider the likelihood of coalition warfare and the need for further development of a combined doctrine to ensure compatibility, if not interoperability, of future command, control, communication, intelligence, and weapon and support systems.

b. This publication applies to operations on or near overseas land areas and addresses the integration and employment of all assets that can be used by the joint force commander in conducting counterair operations. The US Navy term for counterair operations is antiair warfare (see glossary). The following combine to make naval antiair operations different from similar operations conducted in continental theaters of operations: the large distances involved in maritime antiair (or counterair) operations, the less contiguous disposition of friendly forces, the communication difficulties inherent in operations in the maritime environment, the decentralized C2 and execution procedures normally employed by naval task group

commanders, and the multidimensional threat to naval forces. Accordingly, close coordination is essential in order to ensure that all available assets are integrated into the joint force commander's counterair campaign concept of operations.

**3. Terminology.** A complete listing of abbreviations and definitions is provided in the glossary (Appendix B). The special notes listed below are provided to prevent misinterpretation of some general terms used throughout this publication.

a. The terms "unified command," "commander of a unified command," or "commander of a specified command," where used in this publication, shall mean, as appropriate, a command or the commander of a command established by the President through the Secretary of Defense, with the advice and assistance of the Joint Chiefs of Staff. Such commands are also known as commands established by the President.

b. A component command is also called a "component" or a "Service component."

c. The term "joint force" is a general term used in this publication to refer to unified commands, certain specified commands, subordinate unified commands, and joint task forces.

d. Throughout this publication, the commander exercising operational command in accordance with JCS Pub 2, "Unified Action Armed Forces," is referred to as the joint force commander.

## CHAPTER II. GENERAL

1. Requirements. US joint forces may be required to conduct military operations across the spectrum of conflict in a variety of geographic areas. Such US forces must be prepared to fight a numerically superior enemy through the exploitation of advanced technology, sound operational concepts, and realistic training.

2. Effect of Technology. Technology continues to affect the nature of warfare. One major effect of technology is to expand the potential battle area in all dimensions. The joint force commander must see farther, attack deeper and more accurately, and move forces faster than ever before. In conducting combat operations, the joint force commander must integrate a variety of weapon systems over extended ranges against an enemy who employs similar systems. However, technically superior equipment may enhance but will not replace sound doctrine, superior planning, effective training, reliable C2, accurate intelligence, and predictable sustainability.

3. Isolating the Battle Area. The complexity of modern warfare requires the joint force commander to conduct simultaneous deep, close-in, and rear battles in the vertical, horizontal, depth, and time dimensions of the battle to ensure that his objectives are achieved. The time dimension may cause changes to objectives, thereby requiring advanced and continuous planning for the reallocation of resources. The joint force commander must focus attention and resources on critical dimensions of the battle area while considering total theater requirements. In this regard, he must consider the importance of isolating each of those critical dimensions of the battle area in order to focus effort and ensure that objectives are achieved.

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### CHAPTER III. THEATER COUNTERAIR OPERATIONS

1. Air Threat. Enemy fixed-wing aircraft and cruise missiles pose a primary threat to friendly forces and must be countered to gain control of the air and to protect US forces. Additionally, enemy SOF, airborne forces, and attack helicopters pose a threat both in their capability to attack friendly forces independently and in conjunction with hostile ground forces. Tactical ballistic missiles employing conventional, chemical, or nuclear warheads also pose a significant threat to the joint force. Additionally, lethal unmanned, nonballistic systems, such as glide bombs or remotely piloted vehicles, and nonlethal air vehicles with electronic or psychological warfare capabilities also threaten the joint force. Satellite surveillance systems could provide the enemy with warning, reconnaissance, and other capabilities to increase friendly force vulnerability.

2. Definition of Counterair Operations. Counterair operations are those operations conducted to attain and maintain a desired degree of air superiority by the destruction or neutralization of enemy forces. Counterair operations include such measures as the use of interceptors, bombers, antiaircraft guns, SAMs, and ECM, to destroy the air or missile threat both before and after it is launched. Other measures that are taken to minimize the effects of hostile air actions are cover, concealment, dispersion, deception (including electronic), and mobility. Both offensive and defensive actions are involved. The former range throughout enemy territory and are generally conducted at the initiative of the friendly forces. The latter are normally conducted near or over friendly forces and are generally reactive to the initiative of the enemy air forces.

3. Objective of Counterair Operations. The objective of counterair operations is to gain control of the air environment and protect the force. At the start of operations, control may range from control of the air by hostile forces to air supremacy by the joint force. It may also range from local air superiority in a specific part of the battle area to control over the entire area of operations or theater. Control may also vary over time. The degree of control required depends on the tactical

situation; however, the joint force commander must ensure that his forces are capable of achieving sufficient air superiority to ensure freedom of action for critical operations and protection of key assets. When there is an enemy air power offensive threat to friendly surface operations, the requirement for friendly counterair action must be a major consideration in the joint planning for those operations.

**4. Purpose of Counterair Operations.** Air superiority at the proper time and place provides friendly forces a more favorable environment in which to perform their tasks. Limiting the enemy's use of its air power provides increased potential for friendly force success. Because offensive and defensive operations must often rely on the same resources and are often conducted simultaneously in the same airspace, they cannot be considered in isolation from each other. The emphasis to be placed on either offensive or defensive counterair operations will depend on the overall situation and the joint force commander's concept of operations. Counterair operations affect air, land, and maritime battles, and often cross the boundaries between them. Thus, forces of all components or supporting elements may be used. The employment of strategic and tactical air, including carrier air, requires careful coordination with respect to airspace control, safety of operations, and mission prioritization as well as execution.

**5. Fundamental Principles for Conduct of Counterair Operations.** Counterair operations should consider, as a minimum, the following fundamental principles:

**a. Concentration of Force.** The effective application of combat power requires that sufficient force be concentrated at the appropriate time and place to ensure achievement of the objective.

**b. Economy of Effort.** Sufficient effort should be applied to the task to assure that the aim is achieved. Economy of effort requires, in particular, the correct selection and use of weapon systems, sound distribution of forces, and careful balance in the allocation of tasks in order to achieve effective concentration at the decisive time and place and to conserve weapons for countering enemy reattacks.

**c. Unity of Effort.** Unity of effort in joint operations is accomplished through the exercise of command by a single joint force commander having full operational command over

all of those forces assigned to the joint force. The various types of operations committed in support of the concept of operations should be complementary and aimed at fulfilling the overall mission.

d. Use of All Appropriate Forces. The unique capabilities of forces from all Service components and supporting elements of the joint force should be considered in developing the concept of operations.

e. Responsive Force Readiness Posture. Potential aggressors can be expected to use surprise to their advantage. The readiness posture of forces must permit the joint force commander to counter an initial attack quickly and take full advantage of friendly force flexibility.

6. Intelligence. In common with all operations, the effective conduct of counterair operations requires timely acquisition of intelligence information, production, and dissemination of reliable and current intelligence. Intelligence information is required from all sources specifically tasked to support counterair operations. A function of intelligence is to develop a target file and data base that encompass the enemy offensive and defensive capabilities and to provide analyses that will enable prioritization of targets. Intelligence and operational entities will coordinate to develop the operational impact of:

- a. Threat to friendly forces.
- b. Enemy force dispositions.
- c. Effect of damage on the enemy's combat capability.
- d. Effort required to overcome defenses.
- e. Effort required to destroy or neutralize the target.
- f. Benefit to friendly operations.



## **7. Command, Control, Coordination, and Communications.**

**a. Command and Control.** Command relationships for all situations shall be in accordance with JCS Pub 2, "Unified Action Armed Forces." US forces participating in combined operations are subject to command arrangements and authorities established in international agreements. With respect to the conduct of counterair operations, the following principles normally apply:

(1) **Command.** The joint force commander will normally designate a joint force air component commander. The joint force air component commander's responsibilities will be assigned by the joint force commander (normally these would include, but not be limited to, planning, coordination, allocation and tasking based on the joint force commander's apportionment decision). Normally, the joint force air component commander will be the Service component commander who has the preponderance of air assets to be used and the ability to assume that responsibility. The tactical and strategic forces that may be committed to counterair operations, as well as other contributing forces such as SOF, elements of Army, Navy, Air Force, and Marine aviation, surface air defense, and EW forces, remain under the command of their respective components. During sustained operations ashore, US Marine Corps tactical air will be employed in accordance with JCS Pub 12, Vol IV, subparagraph 1A.4.3, which follows:

"The Marine Air-Ground Task Force (MAGTF) Commander will retain operational control of his organic air assets. The primary mission of the MAGTF air combat element is the support of the MAGTF ground element. During joint operations, the MAGTF air assets will normally be in support of the MAGTF mission. The MAGTF Commander will make sorties available to the Joint Force Commander, for tasking through his air component commander for air defense, long-range interdiction, and long-range reconnaissance. Sorties in excess of MAGTF direct support requirements will be provided to the Joint Force Commander for tasking through the air component commander for the support of other components of the joint force or the joint force as a whole. Nothing herein shall infringe on the authority of the Theater or Joint Force Commander in the exercise of operational control, to assign missions, redirect

efforts (e.g., the reapportionment and/or reallocation of any MAGTF TACAIR sorties when it has been determined by the joint force commander that they are required for higher priority missions), and direct coordination among his subordinate commanders to insure unity of effort in accomplishment of his overall mission, or to maintain integrity of the force, as prescribed in JCS Pub 2."

Surface-to-air defense forces complement other counterair capabilities in protecting vital resources of the joint force command and essential elements of combat maneuver units. Air defense forces are normally assigned either as discrete elements of the joint force command or organic to an Army corps, MAF, or lower maneuver echelon. Forces are integrated into the local area air defense system in accordance with the established joint operational procedures and the overall air defense priorities of the joint force commander and of intermediate land force commanders. Air defense units assigned to Army corps, MAF, or lower maneuver echelons are under operational control of the echelon commander, who employs the assigned units under the weapons control procedures and measures established by the AADC. Positioning of surface-to-air systems is reported to the AADC to allow appropriate adjustment of the weapons control status and airspace coordination in the area. Air defense assets not assigned to Army corps, MAF, or lower maneuver echelons are normally under the operational control of the AADC.

(2) Exercise of Operational Control. The joint force commander exercises operational control of all assigned forces to ensure unity of effort. Normally, this authority will be exercised through his Service component commanders. The counterair campaign will be conducted under the guidance of, and to achieve the objectives of, the joint force commander.

(3) Apportionment and Allocation of Resources. The joint force commander will apportion air resources. Based on the joint force commander's guidance and in coordination with other component and supporting commanders, the joint force air component commander will recommend to the joint force commander apportionment of air forces to various mission or geographic areas. This does not preclude the forwarding of apportionment recommendations by other component commanders. The actual allocation of those air sorties apportioned to perform counterair operations by the joint force commander will be prescribed by the joint force air component commander.

b. Coordination and Integration of Land-Based and Maritime Air Defense. Both land-based and maritime air defense resources will be integrated into the joint force commander's counterair campaign concept of operations. Just as counterair operations are an integral part of the overall land campaign, antiair warfare operations are fully integrated with naval warfare tasks such as surface and subsurface warfare. Maritime air defense resources shall be coordinated with the appropriate land-based or airborne air defense C2 network. Similarly, land-based air defense resources employed in maritime operational areas shall be coordinated with the appropriate maritime air defense C2 network.

c. Communications. Effective C2 of diverse weapon systems in counterair operations requires the capability to process, display, and communicate increasing amounts of information while denying the enemy access to the information. Communications systems, including space-based resources, employed by or providing support to joint forces must be capable of providing secure near-real-time exchange of essential information between the joint force commander and subordinate commanders and forces. The systems must be sufficiently flexible and responsive to allow timely redirection of forces, even when airborne. Communications systems must have sufficient capacity, jam resistance, and survivability to accommodate information exchange between levels of command, even when an intermediate level has been disabled. To speed the exchange of essential information, it may be necessary to delineate the extent and type of information to be passed to specific C2 levels. While data

transferred between C2 levels to exercise counterair tasks generally calls for some automatic data processing, the systems must have a backup capability and procedures to maintain continuity of operations should the primary system fail.

8. Airspace Control. Airspace control increases operational effectiveness by promoting the safe, efficient, and flexible use of airspace. The joint force commander normally designates an airspace control authority, who may be the joint force air component commander. Airspace control is a vital factor in all air operations and must include procedures to facilitate routing and recognition of friendly aircraft. Establishment of identification and weapons engagement zones and the direction of noncombat air traffic should be arranged to permit maximum use of air defense resources while offering the least inhibition to offensive counterair and other tactical operations penetrating and returning from enemy territory.

9. Rules of Engagement. The effective use of counterair forces requires the establishment and understanding of common rules of engagement applicable to combat engagement with other forces. The joint force commander is responsible for implementing, and component and supporting commanders are responsible for ensuring compliance with the established rules of engagement. Unless already established by higher authority or an existing plan, the joint force commander shall be responsible for establishing the rules of engagement.

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#### CHAPTER IV. OFFENSIVE COUNTERAIR OPERATIONS

1. General. OCA operations are based on the joint force commander's assessment of the overall threat, the mission, forces available, and other considerations of the operational situation and are conducted at a time and place of friendly force choosing rather than in reaction to enemy initiatives. Force selection for participation in OCA operations will be based on the joint force commander's assessment. Although detailed planning and execution of OCA operations may be delegated to the joint force air component commander, the overall direction will be established by the joint force commander. Whenever hostile air power has the potential to threaten friendly operations, OCA operations must be considered for a major role in tactical operations. OCA operations must be carefully tailored to match the tactical and strategic objectives of the joint force commander. Targets and times of attack must be selected and offensive forces tailored to optimize friendly force offensive capabilities while exploiting enemy vulnerabilities. OCA operations may be the first consideration in the effective employment of friendly tactical air forces. The requirements imposed by the modern battle environment dictate that the joint force commander consider operations to attack follow-on forces in the deep battle area as well as to fight the close-in and rear battles. Successful OCA operations not only limit enemy attacks on friendly forces but also facilitate execution of all missions, including interdiction of follow-on forces, while reducing the number of enemy missiles fired as well as the capability of the enemy to conduct repeated large-scale attacks.

2. Types of Targets. Target selection must consider the commander's objectives and both the short- and long-term effects of reducing enemy air defense, reconnaissance, attack, C3, EW, and logistic support capability. OCA operations will attack enemy targets, both in the air and on the surface, both offensive and defensive, and as close to their source as feasible. The following potential OCA targets should normally be considered in the conduct of OCA operations.

a. Aerial Vehicles. This category may include enemy fixed-wing aircraft, helicopters, RPVs, and cruise missiles.

(1) On the Ground. In most situations, aircraft and air vehicles on the ground are targets for OCA operations. The decision to attack aircraft on the ground depends on whether they are revetted, sheltered, or in the open, as well as on available weapons and timely intelligence.

(2) In Flight. Aircraft and air vehicles in the air may be targets for OCA operations. Priorities will depend on the battle situation.

(3) At Sea and Forward Deployed Surface Ships. Surface ships such as carriers, cruisers, destroyers, and patrol boats equipped with aircraft and long- and short-range cruise missiles may be targets for OCA operations. Priorities will depend on the battle situation. Joint OCA operations by forces of all components may be required to attack enemy seaborne forces.

b. Airfields and Operating Bases. Enemy airfields and operating bases vary in degree of vulnerability. Passive defense measures must be evaluated. Destruction of hangars, maintenance facilities, and POL and other storage areas will affect the enemy's ability to generate aircraft sorties. Runway or taxiway closures may prevent use of the airfield for short periods, thus preventing subsequent takeoff and forcing returning aircraft to more vulnerable or distant locations.

c. Electronic Warfare Systems. This category includes enemy systems, airborne and surfaced-based, capable of performing ECM or EW support measures. Such systems, once detected and located are usually vulnerable and worthwhile targets.

d. C3 Facilities and Installations. An enemy that controls his forces closely is heavily dependent upon communications and other electronic means or upon rigid procedures to achieve that control. Application of C3CM can deny either the command function or the means of communication to exercise control, thereby greatly hampering operations. Sustained C3CM actions leading to the degradation or

elimination of the means of C2 offorces can cause disintegration of enemy efforts. Regardless of the desired effects, coordination among components and participating agencies is paramount to ensure that the premature destruction of an exploitable information or intelligence source is not counterproductive.

e. Surveillance and Control Systems. This grouping includes GCI, early warning, acquisition, and other sensors and space-based systems together with their supporting facilities. Although surface-based radars and sensors may be movable, the time required to redeploy them is lengthy compared with that of the systems they control. Destruction of such sites in a specified geographic area could, therefore, substantially reduce the enemy's capability to detect, react, and bring forces to bear against the joint force. Although these target sites can be hardened, certain components must be in the open during operations. These targets should, therefore, be allocated a high priority in an OCA campaign. These considerations may apply to airborne and naval platforms as well.

f. Logistics and Infrastructure. These targets are normally considered as part of air interdiction, but may be valid counterair targets when selected primarily to influence the enemy air effort. Such targets include munitions and POL facilities, maintenance installations, means of transportation, power supplies, and engineer units associated with the enemy air effort.

3. Forces Available for Offensive Counterair Operations. The manner in which the OCA battle is prosecuted will depend on the forces and systems available and on the general capabilities of the systems, as discussed below. Counterair in the joint area of operations may require contributions by all forces.

a. Aircraft. Aircraft provide the major battle force for OCA operations. Air Force aircraft normally provide a major contribution to this mission. Additionally, Navy and Marine Corps fighter and attack aircraft can contribute to the theater OCA campaign. Aircraft



equipped for EW, aerial refueling, and surveillance, warning, and control are particularly important to the successful and effective execution of counterair operations. The capabilities and limitations of different aircraft are governed by such factors as range, payload, weapons carriage, night and all-weather capability, self-defense capability, air-to-air refueling capability, and aircrew qualification.

b. Missiles and Rockets. Conventional or nuclear surface-to-surface guided missiles, cruise missiles, and long-range unguided rockets may be used in offensive counterair operations.

c. Remotely Piloted Vehicles. RPVs could be used in counterair operations by providing attack, reconnaissance, deception, decoy, or harassment.

d. Drones. Although drones are generally less sophisticated than RPVs, they can be used for attack, deception, jamming, harassment, and decoy functions.

e. Surface Firepower. Artillery and naval gunfire may be employed in the OCA campaign.

f. Special Operations Forces. SOF can conduct direct action strikes, collect intelligence, and provide terminal guidance for air attacks against enemy airfields or operating bases. The use of SOF must be planned as early as possible to ensure that they are inserted in locations that will support the joint force commander's concept of operations.

4. Planning for Offensive Counterair Operations. Three important aspects of the planning process for OCA operations are setting the objective, determining the targets against which operations are to be directed, and coordinating friendly efforts.

a. Objective. An understanding of the joint force commander's objectives is necessary at all planning levels to ensure a coordinated effort.

b. Targeting. Targeting is a process through which installations and forces or their component parts are selected for attack. Points of main effort must be determined and target priorities established. Judged against the background of overall objectives, five criteria will be of vital importance in establishing target priorities:

(1) Threat. The degree of threat to operations posed by the enemy target, including an assessment of the urgency of the need to counter it.

(2) Feasible Effect. The degree of positive effect, in terms of degrading enemy capability or enhancing friendly operations, can be reasonably expected to result from a successful attack.

(3) Delay in Effect. The time between the initial engagement and the desired effect; i.e., delay, disruption, diversion, or destruction of the target. Concentration of effort may compress that time.

(4) Risk Calculation. The probable risk, and whether expected gains from target attack outweigh the risk to own forces.

(5) Forces Available. The number, types, and prioritization of targets that can be attacked. Sufficient forces, of sufficient capability must be provided to ensure that the desired results are obtained.

c. Control and Coordination. To achieve optimal mission effectiveness, surface and airborne warning and control systems must be integrated with procedural controls. This will allow positive procedural control throughout the mission. Coordination of SEAD and OCA options is necessary to achieve the best available force-packaging options, economy of effort, and concentration of force.

5. Tasks. Tasked units should be given as much latitude as possible in the detailed planning and tactical execution of tasks. Commanders of subordinate and supporting commands will carry out the detailed planning and the necessary coordination. The following tasks may be directly connected with OCA operations or may contribute to SEAD:

a. Attack-Strike. Attack-strike (conventional) missions are intended to damage or destroy surface targets. In OCA operations, they are directed against ground targets and selected naval units that contribute to the enemy sortie generation capability and projection of airpower.

b. Fighter Sweep. The fighter sweep is an offensive mission by fighter aircraft to seek out and destroy enemy airborne aircraft or targets of opportunity in an allotted area of operations.

c. Combat Air Patrol. A CAP is an aircraft patrol provided over an objective area, over the force protected, over the critical area of a combat zone, or over an air defense area for the purpose of intercepting and destroying hostile aircraft before they reach their target or weapons release point. CAPs are used to provide temporary air superiority to protect friendly air or surface forces from air attack during the conduct of their operations. Although a CAP flight can patrol a general area or defend a localized area, it could also be positioned between the expected threat and the friendly forces to act as a fighter screen or barrier. CAP flights also contribute directly to DCA operations when they intercept and destroy enemy offensive aircraft before they can pose a threat to friendly forces.

d. Air Escort. When friendly aircraft, en route to or from a target or area, are subject to enemy air attack, escort aircraft may be assigned to cover the force. Escort aircraft can be tasked to defend surface attack missions, reconnaissance, airlift, search and rescue, aerial refueling, airborne C2 aircraft, and electronic combat aircraft.

e. Naval Surface Combatants. Naval surface combatants equipped with long-range SAMs and surface-to-surface cruise missiles can be coordinated with the OCA campaign to capitalize on long-range capabilities.

#### 6. Offensive Counterair Contribution of Other Forces.

Although the majority of OCA tasks require the use of air assets, planning for counterair operations must not be limited to the use of air assets. Therefore, the capabilities of all assets must be exploited in the conduct of counterair operations. All of the following may contribute to OCA operations: attacks by ground, airborne, or air-mobile forces; air and ground attack and intelligence operations by SOF (including organized resistance activities); and armed helicopters.

## CHAPTER V. DEFENSIVE COUNTERAIR OPERATIONS

1. General. DCA operations (air defense) are conducted primarily in reaction to enemy air offensive initiatives and include all measures and means designed to nullify or reduce the effectiveness of hostile air attacks against the joint force. The purpose of DCA operations is to provide a secure area from which all elements of the joint force can operate effectively. To accomplish this, DCA operations defend friendly lines of communication, protect friendly bases, and support friendly land and naval forces while denying the enemy the freedom to carry out offensive air operations. Air defense operations provide protection of friendly assets and forces engaging in attrition of enemy air forces. This will enhance the joint force's freedom of action. Air defense encompasses both passive and active measures as defined below:

a. Passive Air Defense. Passive air defense measures are required by all elements of the joint force to provide the maximum protection for friendly assets and to complicate the enemy's targeting process.

b. Active Air Defense. Active air defense operations are conducted using airborne and surface-based ESM and SIGINT and weapon systems, supported by dedicated secure and highly responsive communications, in order to detect, identify, intercept, and engage and destroy or track hostile or potentially hostile airborne vehicles.

2. Air Defense Requirements. The conduct of theater air defense must provide for the following:

a. Integration. The successful conduct of the air defense battle requires the integrated operation of all available air defense weapon systems of all components. Authority to integrate air defense forces and operations in overseas land areas will be delegated to the AADC, who may also be the joint force air component commander. Air defense operations must also be coordinated with other tactical operations, both on and over land and sea.

b. Readiness. States of readiness that will enable air defense forces to accomplish their objectives must be maintained.

3. Passive Air Defense. Passive air defense improves survivability by reducing the potential effects of air attack. It does not involve the employment of lethal weapons. Depending on the situation and time available in the area of operations, a variety of actions can be taken to improve the joint force's passive air defense posture. These actions include:

a. Dispersal.

b. Hardening of assets, including protection against EMP and TREE.

c. Providing a capability for rapid repair of airfield damage, including the ability to repair aircraft operating surfaces, remove mines and other unexploded ordnance, and restore essential services such as power and fuel supply.

d. Providing nuclear, biological, and chemical defensive equipment and facilities.

e. Providing sufficient assets to allow redundancy of systems and equipment.

f. Providing alert, warning, and all-clear systems.

g. Adopting a comprehensive electromagnetic-emission control policy (including infrared and optical).

h. Netting available communications and sensor systems.

i. Providing camouflage, cover, and deception.

j. Providing OPSEC and COMSEC.

k. Using limited visibility for movement, resupply, and supporting operations.

4. Active Air Defense. Active air defense degrades the effectiveness of enemy air attacks and protects friendly forces. Integrated employment of air-to-air and surface-to-air systems through coordinated detection,

identification, assessment, and engagement of enemy forces is necessary to blunt the enemy attack and protect friendly air and surface forces. Airspace control in an active air defense environment can be extremely difficult but is crucial to successful friendly air operations and effective air defense. Positive control or procedural measures must be implemented to ensure that friendly aircraft can safely transit the airspace without inhibiting air defense or other friendly air operations. Regardless of other controls and measures imposed within defended airspace, air defense forces must be able to identify all aircraft in the area readily by electronic, visual, or procedural means. Rapid, reliable, and secure means of identification, implemented within air defense areas, is critical to the survival of friendly aircraft as well as to the effectiveness of air defense.

a. Methods of Air Defense. Various options for the organization of air defense resources provide effective air defense for the joint force.

(1) Area Defense. A posture designed for the defense of a broad area. There can be specialized applications of area defense when friendly assets to be protected are spread over a large geographical area with defined threat boundaries. An example would be the belt defense used in NATO.

(2) Point Defense. A posture designed for the protection of a limited area, normally in defense of the vital elements of a force and of vital installations.

(3) Self-Defense. A posture developed by friendly units to defend themselves against direct attack or threat of attack through the use of organic weapons and EW.

(4) Maritime Air Defense. Maritime air defense is essentially offensive in nature and may encompass characteristics of all of the other three methods of air defense. Maritime air defense, also termed AAW,

is conducted simultaneously with other naval warfare tasks including antisubmarine warfare, strike warfare, etc. Maritime air defense requires the establishment of mutually supporting defense positions to absorb and weaken the enemy attack progressively and is a function of detection range as well as the speed and responsiveness of weapon systems.

b. Resources. Dedicated air defense assets may be provided by all components and may include or be supported by space assets. Resources of the active air defense system may include the following:

(1) Weapon Systems. All systems have limitations such as reaction time, range, identification capability, and flexibility of operation. Closer examination of individual systems shows that the disadvantages of one are often balanced by the advantages of another; therefore, an effective active air defense requires a mix of weapon types and systems. This balance is required not only between aircraft and surface-to-air weapons but also between the specific types of aircraft, missiles, and AAA. The following air, land, and naval systems may be available.

(a) Aircraft

1. Fighter-interceptor aircraft.
2. Tactical EW aircraft.
3. Aircraft and helicopters with self-protection weapons.
4. AWACS and AEW aircraft.

(b) Surface-to-Air Systems

1. Medium- and long-range SAMs.
2. SHORAD weapons.
3. Maritime AAW weapons.

(2) Surface Air Defense Systems. All air defense agencies and sensors should be integrated to provide an effective surface environment system. This can be

accomplished through the use of direct control or procedural control. Efficient, direct control of air defense resources relies on the provision and exchange of essential real-time information. This information must include air defense warnings that allow air defense assets to be placed at appropriate readiness states and permit timely target assignment. The exchange of real-time information requires the provision of adequate track capacity within systems and the cross-telling of tracks using data processing systems, including space-based assets. Secure, survivable communications systems to connect the control agencies are essential. However, when secure communications are not operational, enemy track information from airborne sensors may be passed by nonsecure voice broadcast. In addition, the surface environment system itself should be survivable and have redundancy. Air defense sensors are normally optimized to perform specific surveillance or control functions. Individual surface-based systems have limitations in range, low-level capability, vertical coverage, target discrimination, and the provision of height data. Equipment operate on widely differing frequencies and, as a consequence, have different susceptibilities to ECM. Similarly, ECCM capability varies from system to system. To provide the spectrum of cover required for air defense operations, a number of complementary systems are necessary. These range from a mix of static and mobile equipment to strategic warning systems. Systems should be netted to enable the gathering and dissemination of information under all operational conditions and to provide mutual support. The surface environment may include:

- (a) Early warning and surveillance systems.
- (b) Other netted civil and military sensors.
- (c) Low-level radar systems.
- (d) Mobile radars, including sea-based systems.



(e) Strategic warning systems.

(f) Identification systems.

(g) EW systems.

(h) Communications systems.

(i) Data processing facilities.

(3) Additional Contributing Systems. Contributing systems include:

(a) Airborne Early Warning. Airborne sensors serve to overcome range and low-level detection limitations inherent in a surface-based sensor system and should be integrated with surface systems. The use of AEW systems will extend detection ranges and consequently increase the time available for reaction. At the same time, the threat from low-level surprise attacks will be significantly reduced.

(b) Intelligence Sources. These may provide indications of imminent hostile activity and possess the potential to provide early warning and positive hostile identification before it would be otherwise detected by the air defense environment. The maximum possible use of this information is essential. Clandestine sources may augment this information.

(c) Logistic and Support Agencies. These provide the continuity and sustainability required to enable the air defense force to accomplish its purpose. Adequate and timely support must be planned, coordinated, and executed.

(d) Civilian and Military Air Traffic Control Facilities. Air traffic control facilities in the area of operation may contribute information of value to air defenses. These capabilities should be exploited and, where possible, netted into the surface environment.

5. Execution of Defensive Counterair Operations. Execution of defense counterair operations requires a surveillance and reporting system capable of near-real-time production and dissemination of the tracking data necessary for the effective engagement of targets. Track production is a sequential process that begins with the surveillance function. As a track is detected it must be identified and labeled, and this information must be disseminated as rapidly as possible. The track data provided should be sufficiently detailed and timely to permit the C2 system to evaluate the track, determine the significance of the threat, and either designate air defense forces for interception or engagement or advise units of the passage of friendly aircraft.

a. Hostile Criteria and Rules of Engagement. To be effective, engagement control procedures must be centrally imposed. This requires standardized rules of engagement. The optimum employment of air defense weapon systems requires early separation of friend and foe to maximize beyond-visual-range engagement while avoiding fratricide.

b. Employment of Air Defense. Early warning of enemy attack is vital if in-depth defense is to be obtained. Active air defense should be developed to permit the interception of intruding enemy aircraft and missiles as early as possible and as far forward as feasible. Engagement process should continue, where possible, through the enemy aircraft's weapons release point and departure from the target area to ensure attrition of enemy aircraft returning to base. Careful control of available air defense assets is required. Careful consideration should be given to the allocation of available weapons to inbound threats before any allocation to RTB aircraft. Weapon systems may be employed as follows:

(1) Fighter-Interceptor

(a) Interception. Intercept missions may involve use of aircraft from: the scramble of aircraft from ground alert status, direction of aircraft

from combat air patrols, or redirection of aircraft from other missions. Interceptions made with the assistance of air defense radars take the form of close control or of a more generalized broadcast control. In the event that no form of control is available, aircraft should be prepared to operate autonomously.

(b) Combat Air Patrol. CAP missions enable rapid reaction to enemy intrusion and may be positioned well forward of areas to be defended. Patrols may also be conducted over a specific area; in support of friendly air or surface forces; over critical areas of a combat zone; and over air, land, and sea corridors. CAP missions may be supported by air-to-air refueling.

(c) Air Escort. Air escort missions by air defense aircraft may be required in support of other aircraft.

(2) Armed Helicopters. These aircraft will normally be employed throughout the theater integral to the maneuver operations of a land combined arms force. These operations may require aircrews to engage enemy air or ground forces, especially enemy helicopters and battlefield air defenses, in air-to-air or air-to-ground combat to protect themselves and other elements of the land force. Such combat is normally engaged while executing the mission orders of the land force commander to achieve assigned objectives of the land force, but in so doing complements the theater counterair campaign throughout the full depth of the battlefield.

(3) Surface-to-Air Weapons. Surface-to-air weapons are employed either in area or point defense operations. These weapons potentially offer large amounts of firepower and instant responsiveness to the assets defended. For maximum effect, the employment of various types of surface-to-air weapons (e.g., guns, SHORAD weapon systems, medium- and long-range SAMs) should be fully coordinated and should be integrated into the air defense system. The optimal capabilities of each different weapon system occur at different ranges and

altitudes, and, through this integration, the surface-to-air systems can best achieve mutual support and provide the best overall coverage. Coordination between surface-to-air weapons and the overall air defense system should ensure both the minimum risk passage for friendly aircraft and the means to deconflict employment of surface-to-air weapons and defense fighters.

6. Control and Coordination of Weapons. Air defense weapon systems are capable of autonomous operations if centralized control fails; in the absence of centralized control, fighter aircraft, SAM, and AAA systems can operate in the autonomous mode. Maritime AAW forces normally employ centralized control but are also capable of autonomous operations. In the absence of centralized control, procedural means are used to permit the safe passage of friendly aircraft and to enable the effective use of surface-to-air weapons. To capitalize on the complementary capabilities of the various weapon systems, integration or, at a minimum, coordinated use of air defense systems within an area, is necessary, in addition to normal airspace control procedures. Area control measures include air defense operations areas and weapons engagement zones (see Appendix A).

a. Fighter-Interceptor

(1) Intercept. Intercept missions are tasked by the agency controlling the specific sector of operations in response to the detection and assessment of a hostile, or potentially hostile, target or one whose origin and purpose are unknown. Where possible, aircraft will remain under the close control of the initiating control agency, although this control may be transferred to adjacent sectors of responsibility if required. Control of an intercept may be transferred to the pilot when the aircraft is in positive contact with the target or when the environment precludes positive direction by the controlling agency. In the latter situation,

alternative procedures, such as the provision of a broadcast of enemy activity, would be automatically instituted by the controlling authority or the aircrew to provide for autonomous or semiautonomous action.

(2) Combat Air Patrol. Interceptors may be tasked for CAP where warning of enemy air activity may be inadequate for aircraft on alert to achieve an interception before enemy weapon release point. Direction of intercepts from the CAP location may be provided by a controlling agency, or aircraft may operate autonomously when targets are detected by on-board sensors.

b. Armed Helicopters. In DCA operations, air-to-air combat planning for armed helicopters must be netted into and coordinated with the maneuver commander's plan and scheme of maneuver. This allows armed helicopters to conduct air-to-air combat operations when the need arises, under the command of their parent organization, while accomplishing their primary mission. Units will be integrated into the air defense net to obtain information about friendly air defense positions, current air threat information, weapons control status, and coverage areas.

c. Surface-to-Air Weapons. The effectiveness of surface-to-air weapons requires a highly reliable, centralized linkup with air operations and an adequate identification process in order to preclude engagement of friendly aircraft and unnecessary expenditure of air defense resources. Weapon control status (weapons free, weapons tight, and weapons hold) and firing command or fire control orders in NATO (engage and cease engagement, etc.), along with rules of engagement, are used to control surface-to-air fires. Therefore, all available surface-to-air defense assets in a given land area must be incorporated into the overall area air defense plan and be subject to the integrated air defense procedures and weapons control measures of the AADC.

(1) Medium- and Long-Range SAMs. SAMs are controlled through data link or voice facilities of the SAM C2 system.

(2) SHORAD. Although integrated into an overall air defense system, SHORAD operations may be decentralized; the needed responsiveness of short-range weapons requires that the authority to engage aircraft be delegated to the weapons commander. Nevertheless, SHORAD will be subject to the AADC's rules and procedures in the form of weapon control status mentioned above. However, for US Army units, weapon control status authority against helicopters should normally be designated to the appropriate land maneuver force commander. For Marine Corps units, weapon control status authority is designated to the appropriate air command control organization. SHORAD units in defense of rear area critical assets, such as airfields, should be integrated into the centralized air defense C2 system. In addition, SHORAD units assigned to a base and installation defense will be under the operational control of the base or installation commander.

(3) Organic Forces. SAM and SHORAD units organic to land corps and maneuver forces will be positioned tactically by the assigned land force commander. These units must be responsive to the air defense needs and the maneuver scheme of the supported force. When possible, they should also contribute to the integrated air defense of the area. Rules and procedures imposed by the AADC are binding on these units. Liaison between these units and the central air defense C2 system may be the primary means for dissemination of weapon control status, early warning information, and friendly air activity information.

7. Self-Defense. There will never be enough specialized air defense assets to provide protection for all other units. All units must, therefore, be capable of self-defense against air attack by using their organic weapons.

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## CHAPTER VI. SUPPRESSION OF ENEMY AIR DEFENSES

1. General. The effectiveness of combat operations depends to a great extent on the ability of aircraft to accomplish their assigned missions. Friendly aircraft are threatened by a variety of hostile enemy air defense systems. Action against enemy air defense systems, SEAD, may be carried out in either localized or campaign operations. Air, surface, or subsurface forces of a joint force may be employed to suppress or destroy enemy air defenses. Surface and subsurface organic firepower can concentrate on enemy defense systems within local areas of responsibility, allowing friendly aircraft to be employed against longer range SEAD targets. SEAD activities may include the use of EW resources as well as lethal attack systems. SEAD activities complement both offensive and defensive operations and may be both a major and a leading element of any air operations.

2. Definition. SEAD is that activity that neutralizes, destroys, or temporarily degrades enemy air defense systems in a specific area by physical attack and/or EW.

3. Role. SEAD reduces the capabilities of enemy surface-to-air defenses, thereby reducing the attrition of friendly air resources and increasing the overall effectiveness of friendly operations.

4. Responsibilities. SEAD objectives are specified by the joint force commander, who will consider the unique capabilities of each component to contribute to the counterair campaign. Initial campaign objectives will be to protect friendly airborne standoff systems, disrupt the cohesion of enemy air defenses, and assist in attaining tactical flexibility for friendly aircraft in the medium- and high-altitude regimes. The objectives of localized SEAD are to protect friendly aircraft conducting air operations and to allow friendly aircraft to operate at low and medium altitudes. Complementary suppression includes aircrew self-defense and attack against targets of opportunity.

5. Threat. Friendly tactical air operations may be challenged by hostile air forces, SAMs, air defense



artillery, and radioelectronic combat forces. These enemy systems will normally be part of a comprehensive and well integrated air defense system designed to deny freedom of action to friendly forces and to delay, disrupt, or destroy them. The types and level of enemy air defenses will influence what actions are necessary to eliminate the enemy threat.

**6. Tasks.** SEAD is accomplished by destructive and disruptive actions.

**a. Destructive.** Physical attack offers more lasting and cumulative benefits through the attrition of enemy weapon systems and weapon control systems. It also provides the bonus effect of limiting the operation of enemy weapon control systems through the psychological effects on air defense operators of the threat of physical attack. Physical attack is accomplished by employing the following forces:

(1) Escort Aircraft. These are assigned to protect other aircraft during a mission. When friendly aircraft en route to an objective are subject to surface-to-air attack, SEAD escort aircraft may accompany them, flying either directly with the force or at a standoff position. Escort aircraft may be tasked to defend aircraft conducting air-to-surface attacks, reconnaissance, airlift, air-mobile operations, search and rescue, aerial refueling, airborne warning, or airborne C2.

(2) Conventional Forces and Weapons. Multirole or dedicated air-to-ground aircraft, SOF, or ground forces (armor, artillery, and attack helicopters), naval gunfire, and torpedo-and missile-equipped naval forces may be configured to attack enemy surface air defenses along planned routes of tactical and strategic air operations. These missions may precede or accompany the main air effort.

(3) Specialized Forces (WILD WEASEL and IRON HAND). These units are specially equipped and trained to destroy enemy air defense systems selectively. The aircraft can attack SAM or AAA radars using antiradiation missiles or other ordnance. They can also locate radars precisely and lead other aircraft to attack enemy surface air defenses, thus multiplying their own offensive capability through hunter-killer team tactics.

b. Disruptive. Though they inflict no attrition upon enemy systems, disruptive measures can prevent enemy surveillance of friendly air operations and can cause enemy air defenses to expend munitions needlessly or divulge emitter locations, thereby increasing their vulnerability to attack. Employment techniques include a mix of ECM, deception, chaff, RPV, drones, and aircraft self-protection systems. The objective of disruptive activities is to decrease the effectiveness of the enemy air defense systems by delaying, disrupting, confusing, and/or deceiving his air defense system.

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## CHAPTER VII. SUPPORTING OPERATIONS

1. General. To ensure their success, counterair operations must be supported by supplementary measures and operations. These include: C3CM, EW, air-to-air refueling, reconnaissance (including that provided by space-based elements), special operations, and land maneuver operations.

2. Command, Control, and Communication Countermeasures. Modern military forces are highly dependent upon C3 for effective application of combat power. The fundamental elements of C3 are human and machine sensors, processors, decisionmakers, and communicators. These elements are vulnerable, in varying degrees, to weapon effects, jamming, deception, and OPSEC. C3CM is a strategy that integrates the use of operations security, military deception, jamming, and physical destruction, supported by intelligence, to deny information to, influence, degrade, or destroy adversary C3 capabilities and to protect friendly C3 against such actions.

3. Electronic Warfare. EW supports the C3CM strategy, SEAD, and contributes to the success of counterair operations by using electromagnetic energy to determine, exploit, reduce, or prevent hostile use of the electromagnetic spectrum. EW also involves action to retain friendly use of the electromagnetic spectrum. EW actions to achieve these goals consist of ECM, ECCM, and ESM.

4. Air-to-Air Refueling. Air-to-air refueling must be considered for its potential advantages in enabling aircraft to:

- a. Concentrate in larger forces for an operation by extending their range and endurance.
- b. Penetrate deeper into enemy territory with higher ordnance loads.
- c. Maintain airborne alert for extended periods of time.
- d. Extend endurance for recovery.
- e. Deploy and redeploy.

In the counterair battle in areas where the use of airspace is being strongly contested, the advantages of air-to-air refueling may not be available because of the vulnerability of aircraft engaged in the refueling process.

5. Surveillance and Reconnaissance. Information derived from surveillance and reconnaissance will contribute to the planning and execution of counterair operations. Most of this information will probably be derived from aerial surveillance and reconnaissance and from intelligence collections; however, for OCA operations, particularly SEAD, surface surveillance and reconnaissance may play an important part. To some extent, national sensor systems (including those that are space based) may also provide important surveillance and reconnaissance information.

6. Special Operations Forces. SOF can collect intelligence, conduct direct-action strikes, and provide terminal guidance for air attacks against enemy airfields or operating bases. The use of SOF must be carefully planned as early as possible to ensure that they are inserted in locations that will support the joint force commander's concept of operations.

7. Land Maneuver Forces. Depending on the situation, both long-range artillery and armor units of the land maneuver forces have capabilities that can be used in counterair operations. These capabilities should be carefully considered in the integrative process during the planning for and the execution of the counterair campaign, with specific emphasis on SEAD operations.

## APPENDIX A

### COUNTERAIR OPERATIONS CONTROL MEASURES

1. Air Defense Operations Area. An area and the airspace above it within which procedures are established to minimize mutual interference between air defense and other operations. It may include designation of one or more of the following:

a. Air Defense Action Area. An area and the airspace above it within which friendly aircraft or surface-to-air weapons are normally given precedence in operations except under specified conditions.

b. Air Defense Area. Overseas, a specifically defined airspace for which air defense must be planned and provided.

c. Air defense Identification Zone. Airspace of defined dimensions within which the ready identification, location, and control of airborne vehicles are required.

d. Firepower Umbrella. An area of specified dimensions defining the boundaries of the airspace over a naval force at sea within which the fire of ship's antiaircraft weapons can endanger aircraft and within which special procedures have been established for the identification and operation of friendly aircraft.

2. Weapon Engagement Zone. In air defense, airspace of defined dimensions within which the responsibility for engagement normally rests with a particular weapon system.

a. Fighter Engagement Zone. Fighter engagement zones will be established in those areas where no effective surface-to-air capability is deployed.

b. High-Altitude Missile Engagement Zones. Normally applied to long-range SAMs, a high-altitude missile engagement zone will limit the volume of airspace within which these weapons may conduct engagements without specific direction from the authority establishing the high-altitude missile engagement zone.

c. Low-Altitude Missile Engagement Zone. This volume of airspace establishes control over engagements by low- to medium-altitude SAMs. The considerations pertinent to the HIMEZ and FEZ also apply to the low-altitude missile engagement zone. Subject to weapon systems capabilities, the LOMEZ will normally extend beyond the forward edge of the battle area.

d. Short-Range Air Defense Engagement Zone. Areas of SHORAD deployment may fall within a LOMEZ or HIMEZ. It is possible that some areas may be solely defended by SHORAD assets. A short-range air defense engagement zone can be established to define the airspace within which these assets will operate. Because centralized control over the short-range air defense weapons may not be possible, these areas must be clearly defined and disseminated so that friendly aircraft can avoid them.

e. Weapons-Free Zone. An area where friendly aircraft are prohibited and air defense forces may engage without need to identify. Authority to declare weapons-free zones must be specifically delegated by the officer exercising operational command.

APPENDIX B

GLOSSARY

PART I--ABBREVIATIONS

|        |   |
|--------|---|
| AAA    | antiaircraft artillery                                  |
| AADC   | area air defense commander                              |
| AAW    | antiair warfare   |
| AEW    | airborne early warning                                  |
| AWACS  | airborne warning and control system                     |
| C2     | command and control                                     |
| C3     | command, control, and communications                    |
| C3CM   | command, control, and communications<br>countermeasures |
| CAP    | combat air patrol                                       |
| COMSEC | communications security                                 |
| DCA    | defensive counterair                                    |
| ECM    | electronic countermeasures                              |
| ECCM   | electronic counter-countermeasures                      |
| EMP    | electromagnetic pulse                                   |
| ESM    | electronic warfare support measures                     |
| EW     | electronic warfare                                      |
| FEZ    | fighter engagement zone                                 |
| GCI    | ground control intercept                                |
| HIMEZ  | high-altitude missile engagement zone                   |
| JTF    | joint task force  |
| LOMEZ  | low-altitude missile engagement zone                    |
| MAF    | Marine amphibious force                                 |
| MAGTF  | Marine air-ground task force                            |
| OCA    | offensive counterair                                    |
| OPSEC  | operational security                                    |



|        |  |
|--------|--|
| POL    | petroleum, oil, and lubricant              |
| RTB    | return to base                             |
| RPV    | remotely piloted vehicle                   |
| SAM    | surface-to-air missile                     |
| SEAD   | suppression of enemy air defenses          |
| SHORAD | short range air defense                    |
| SIGINT | signal intelligence                        |
| SOF    | special operations forces                  |
| TREE   | transient radiation effects on electronics |

## PART II--DEFINITIONS

active air defense. Direct defensive action taken to destroy attacking enemy aircraft or missiles or to nullify or reduce the effectiveness of such attack. It includes such measures as the use of aircraft, interceptor missiles, air defense artillery, non-air defense weapons in an air defense role, and electronic countermeasures and counter-countermeasures. (JCS Pub 1, DOD)

air defense operations area. An area and the airspace above it within which procedures are established to minimize mutual interference between air defense and other operations; it may include designation of one or more of the following: air defense action area, air defense identification zone, and/or fire-power umbrella. (JCS Pub 1, DOD)

air space control. A service provided in the combat zone to increase operational effectiveness by promoting the safe, efficient, and flexible use of airspace. Airspace control is provided in order to permit greater flexibility of operations, while authority to approve, disapprove, or deny combat operations is vested only in the operational commander.

air superiority. That degree of dominance in the air battle of one force over another that permits the conduct of operations by the former and its related land, sea, and air forces at a given time and place without prohibitive interference by the opposing force. (JCS Pub 1, DOD)

air supremacy. That degree of air superiority wherein the opposing air force is incapable of effective interference. (JCS Pub 1, DOD)

allocation. The translation of the apportionment into total number of sorties by aircraft type available for each operation/task. (JCS Pub 1, DOD)

antiair warfare. A US Navy/US Marine Corps term to indicate an action required to destroy or reduce to an acceptable level the enemy air and missile threat. It includes such measures as the use of interceptors, bombers, antiaircraft.

guns, surface-to-air and air-to-air missiles, electronic countermeasures, and destruction of the air or missile threat both before and after it is launched. Other measures that are taken to minimize the effects of hostile air action are cover, concealment, dispersion, deception (including electronic), and mobility. (JCS Pub 1, DOD) See also counterair operations

apportionment. The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations and/or geographic areas for a given period of time. (JCS Pub 1, DOD)

area air defense commander. Within an overseas unified command, subordinate unified command, or joint task force, the commander will assign overall responsibility for air defense to a single commander. Normally, this will be the Air Force component commander. Representation from the other Service components involved will be provided, as appropriate, to the area air defense commander's headquarters. (JCS Pub 1, DOD)

command, control, and communications countermeasures. The integrated use of operations security, military deception, jamming, and physical destruction, supported by intelligence, to deny information to, influence, degrade, or destroy adversary command, control, and communications (C3) capabilities and to protect friendly C3 against such actions... (abridged from JCS Pub 1, DOD)

control. Authority that may be less than full command exercised by a commander over part of the activities of subordinate or other organizations. (JCS Pub 1, DOD)

counterair operations. Air operations conducted to attain and maintain a desired degree of air superiority by the destruction or neutralization of enemy forces. Counterair operations include such measures as the use of interceptors, bombers, antiaircraft guns, surface-to-air missiles, electronic countermeasures, and destruction of the air or missile threat both before and after it is launched. Other measures that are taken to minimize the effects to hostile air actions are cover, concealment, dispersion, deception (including electronic), and mobility. Both offensive and defensive actions are involved. The former range throughout enemy territory and are generally conducted at the initiative of friendly forces. The latter are normally conducted near or over friendly forces and are generally reactive to the initiative of the enemy air forces. See also antiair warfare.

defensive counterair operations (air defense). The protection of assets from air attack through both direct defense and destruction of the enemy's air attack capacity in the air.

engage. A command order used to direct surface-to-air units to engage specific targets with intent to destroy.

joint force air component commander. The joint force air component commander derives his authority from the joint force commander who has the authority to exercise operational control, assign missions, direct coordination among his subordinate commanders, redirect and organize his forces to ensure unity of effort in the accomplishment of his overall mission. The joint force commander will normally designate a joint force air component commander. The joint force air component commander's responsibilities will be assigned by the joint force commander (normally these would include, but not be limited to, planning, coordination, allocation and tasking based on the joint force commander's apportionment decision). Using the joint force commander's guidance and authority, and in coordination with other service component commanders and other assigned or supporting commanders, the joint force air component commander will recommend to the joint force commander apportionment of air sorties to various missions or geographic areas.

offensive counterair operations. An operation mounted to destroy, disrupt or limit enemy air power as close to its source as possible. (JCS Pub 1, DOD)

operational command. Those functions of command involving the composition of subordinate forces, the assignment of tasks, the designation of objectives and the authoritative direction necessary to accomplish the mission. Operational command should be exercised by the use of the assigned normal organizational units through the commanders of subordinate forces established by the commander exercising operational command. It does not include such matters as administration, discipline, internal organization, and unit training except when a subordinate commander requests

assistance. (The term is synonymous with operational control and is uniquely applied to the operational control exercised by the commanders of unified and specified commands over assigned forces in accordance with the National Security Act of 1947, as amended and revised (10 United States Code 124). (JCS Pub 1, DOD)

operational control. For DOD, synonymous with operational command. (JCS Pub 1, DOD)

passive air defense. All measures, other than active defense, taken to minimize the effects of hostile air action. These include the use of cover, concealment, camouflage, deception, dispersion and protective construction. (JCS Pub 1, DOD)

suppression of enemy air defenses. That activity that neutralizes, destroys, or temporarily degrades enemy air defenses in a specific area by physical attack and/or electronic warfare. Also called SEAD.

weapon engagement zone. In air defense, airspace of defined dimensions within which the responsibility for engagement normally rests with a particular weapon system. See also fighter engagement zone; missile engagement zone; short range air defense engagement zone. (JCS Pub 1, DOD)

weapons control. The varying degrees of formal control an area air defense commander exercises over all air defense weapons in his area of responsibility.

weapons free. In air defense, a weapon control status used to indicate that weapons systems may be fired at any target not positively identified as friendly. (JCS Pub 1, DOD)

weapons hold. In air defense, a weapon control status used to indicate that weapons system may be fired only in self-defense or in response to a formal order. (JCS Pub 1)

weapons tight. In air defense, a weapon control status used to indicate that weapons systems may be fired only at targets identified as hostile. (JCS Pub 1, DOD)

\* Unless identified as extracted from JCS Pub 1, terminology herein is not standardized within the Department of Defense and is applicable only in the context of this document.